

REMARKS

This application pertains to a novel method and appliance for performing membrane electrophoresis.

Claims 1-26 are pending.

The drawings stand objected to because elements 28 and 29 are not shown. A corrected copy of Fig. 2, i.e., a replacement sheet for Fig. 2, is annexed hereto, upon which the designating numbers 28 and 29 have been added. It is believed that this replacement drawing obviates the objection, and the objection should now be withdrawn.

Claims 19-22 and 24-25 stand rejected under 35 U.S.C. 102(b) as being anticipated by Sanchez et al (US 4,758,320). Sanchez et al. is concerned with a structure which is divided up into a plurality of operational compartments by membranes (Col. 4, lines 42-47, Fig. 1) All of the membranes are specific semi-permeable membranes for the separation to be carried out (Col. 4, lines 48-50).

By contrast, Applicants' appliance comprises one or more pairs of diluate/concentrate spaces, wherein in each pair the diluate and concentrate spaces are separated from each other by ultrafiltration or microfiltration membranes and each pair of diluate/concentrate spaces, where there are more than one of such pairs, are separated from the adjacent pair by a restriction membrane, and the electrode spaces are also separated from the other spaces by restriction membranes (page 9, line 11). The restriction membranes typically have a much lower cutoff point than the separation membranes do (page 10, lines 1-2).

There is absolutely nothing in the Sanchez reference that would teach or suggest the use of restriction membranes to delimit the electrode spades and to separate the pairs of diluate/concentrate spaces from each other. The Sanchez reference cannot therefore be seen as teaching or suggesting Applicants' novel appliance, and the rejection of claims 19-22 and 24-25 under 35 U.S.C. 102(b) as being anticipated by Sanchez et al (US 4,758,320) should now be withdrawn.

Claims 1-8, 12-13 and 16-18 stand rejected under 35 U.S.C. 103(a) as obvious over Sanchez et al. and Gritzner (US 4,043,895) in view of Ahlgren et al. (US 4,043,896).

The method disclosed in Sanchez is one in which a solution is filtered through a membrane and solid particles or macromolecules contained in the solution are retained by the membrane. This, of course, has absolutely nothing to do with Applicants' electrophoresis process. In this regard, it must be pointed out that Applicants' process requires a pressure difference between the diluate spaces and concentrate spaces sufficient to essentially **prevent** liquid flow through the membrane.

The Examiner turns to Gritzner for a method of electrophoretic separation, and would somehow modify Sanchez's filtration method to use Gritzner's electrophoretic separation. The Examiner does not point out how this would be done, however. What is it in the Sanchez process that the Examiner thinks those skilled in the art would change? Sanchez applies a high pressure to one side of a membrane and low pressure to the other side of the membrane to promote fluid flow through the membrane. Gritzner, by contrast, balances the fluid flow on opposite sides of his membranes to minimize or eliminate net fluid transport through the membrane.

The teachings of each reference is therefore the direct opposite of the teaching of the other, and there is simply no way that they could possibly be combined. Even the Gritzner reference itself points out this difference (col. 3, lines 40-48). Furthermore, it does not appear that the Gritzner process could tolerate any pressure difference across the membrane. To this end, Gritzner goes to great lengths to balance the pressure on the two sides (col. 5, lines 1-20).

Sanchez uses pressure to promote flow through his membrane; Gritzner balances pressure to prevent flow through his membrane; but Applicants maintain a pressure difference to prevent flow through the membrane. The three processes have absolutely nothing in common, and it is simply not possible to modify either Sanchez or Gritzner to arrive at Applicants' process.

No person skilled in the art would, or could, combine Sanchez and Gritzner.

Although the Examiner cites the Ahlgren et al reference, Applicants' are unable to see where the Examiner has applied this reference in this rejection, and therefore have not addressed this reference.

From the foregoing, it is clear that Applicants' claims are neither anticipated nor obvious over Sanchez in view of Gritzner, and the rejection of claims 1-8, 12-13 and 16-18 under 35 U.S.C. 103(a) as obvious over Sanchez et al. and Gritzner (US 4,043,895) in view of Ahlgren et al. (US 4,043,896) should now be withdrawn.

Claim 9 stands rejected under 35 U.S.C. 103(a) as obvious over Sanchez et al. and Gritzner, in view of Ahlgren et al. The Examiner relies on Ahlgren for a electrode rinsing solution. No electrode rinsing solution could possibly overcome the stark differences between Applicants' process and anything that could be derived from the Sanchez and Gritzner references, and the rejection of claim 9 under 35 U.S.C.

103(a) as obvious over Sanchez et al. and Gritzner, in view of Ahlgren et al. should now be withdrawn.

Claims 10 and 11 stand rejected under 35 U.S.C. 103(a) as obvious over Sanchez and Gritzner in view of Ahlgren et al and Perry et al (US 5,087,338).

The differences between Applicants' method and anything that could be derived from Sanchez and Gritzner have been discussed above. The Examiner relies on Ahlgren for electrode rinsing solutions comprised of dilute sulphuric acid, and Perry for a buffer solution. No rinsing solution or buffer solution could possibly overcome the differences discussed above.

The Examiner mentions claim 17, but claim 17 is not rejected in this rejection, so Applicants do not have any comments about this claim, other than to point out that , as above, the use of microfiltration or ultrafiltration for concentrating a diluate solution after separation cannot possibly overcome the differences pointed out above.

For the foregoing reasons, the rejection of claims 10 and 11 under 35 U.S.C. 103(a) as obvious over Sanchez and Gritzner in view of Ahlgren et al and Perry et al (US 5,087,338) should now be withdrawn.

Claims 14 and 15 stand rejected under 35 U.S.C. 103(a) as obvious over Sanchez et al. and Gritzner, in view of Perry et al.

The differences between Applicants' method and anything that could be derived from Sanchez and Gritzner have been discussed above. The Examiner relies on Perry for the conductivity of a diluate solution. Such conductivity neither addresses nor overcomes the differences pointed out above.

The rejection of claims 14 and 15 under 35 U.S.C. 103(a) as obvious over Sanchez et al. and Gritzner, in view of Perry et al. should accordingly now be

withdrawn.

Claim 23 stands rejected under 35 U.S.C. 103(a) as obvious over Sanchez in view of Gritzner. The Examiner sees Sanchez as disclosing heat exchangers. Heat exchangers do not compensate for the differences discussed above however, and the rejection of claim 23 under 35 U.S.C. 103(a) as obvious over Sanchez in view of Gritzner should be withdrawn.

Claim 26 stands rejected under 35 U.S.C. 103(a) as obvious over Sanchez in view of Ahlgren et al. Sanchez, as discussed above, concerns a process in which a solution is filtered through a membrane and solid particles or macromolecules contained in the solution are retained by the membrane. This has absolutely nothing to do with any electrophoresis process, let alone Applicants'. The Examiner relies on Ahlgren for electrode rinsing circuits. Electrode rinsing circuits will not bring Sanchez any closer to Applicants' process, and the two processes remain far different from each other, notwithstanding the teaching of Ahlgren. The rejection of claim 26 under 35 U.S.C. 103(a) as obvious over Sanchez in view of Ahlgren et al. should therefore now be withdrawn.

In view of the present amendments and remarks it is believed that claims 1-26 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicant requests that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
NORRIS, McLAUGHLIN & MARCUS

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